

The Development of British Tactical Air
Power, 1940–1943

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A History of Army Co-operation Command

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For my grandmother Roseann Fraser

INTRODUCTION

Although the First World War ended with the existence of an independent air force in Britain, the majority of the work undertaken in the air during the war had been in aiding the British Expeditionary Force (BEF) to defeat Germany. One of the major developments in air power that came out of the First World War was in its application at the strategic level, through attacks on the German homeland. These attacks had been limited in both scale and damage done but they sowed the seeds for how the Royal Air Force (RAF) would look to develop air power in the future. During the interwar period, army support tasks, such as close air support, battlefield air interdiction and artillery spotting and reconnaissance were relatively neglected in comparison to the thinking on how to apply air power at the higher levels of war.

At the outbreak of the First World War in 1914, the newly created Royal Flying Corps (RFC) was not held in high regard by the army authorities who were to control its missions.¹ Aircraft, however, were to prove their use in the earliest campaigns of the war when they were initially used in a reconnaissance role. As the accuracy of aircraft reports were verified they were relied upon more and more in this function, and in spotting for artillery,² so much so that new aircraft designed by the RFC were constructed with army co-operation in mind.³ They were able to provide ‘invaluable sources of intelligence from as early as 19 August [1914]’ and were able to detect the famous gap between the German First and Second Armies into which the BEF advanced, attacking and halting the German advance.⁴ This was confirmed by further air reconnaissance that ‘revealed that von Kluck’s [the German First Army Commander] change of plan had left

his right flank exposed, [and] an opportunity presented itself for counter-attack'.⁵ This counter-attack manifested itself in the 'Miracle of the Marne'. Hyde has described the priorities assigned to the RFC as 'first[ly] reconnaissance and secondly fighting'.⁶ Air power was employed in both tactical and strategic roles by both the British and the German air forces by the end of conflict.⁷

One of the first major uses of tactical air power during the First World War had been the interdiction operations conducted by the Second and Third Wings RFC on 10 March 1915 at Neuve Chappelle. During this operation, German reserves moving around the Lille–Menin–Courtrai area were bombed as they made their way up to the front lines.⁸ The first operational order for the use of close air support for troop movements was at the Battle of Arras in April 1917.⁹ Aircraft of the RFC were detailed to attack 'obstacles in the path of the advancing infantry'.¹⁰ The opening of the third Battle of Ypres saw further refinement of close air support in the attacks made at Arras. Peter Simkins writes that 'RFC single-seater squadrons were detailed to give direct help to the infantry by making low-level attacks on German positions and troop concentrations with machine guns and 25lb Cooper bombs'.¹¹

As the First World War descended into a mire of trench warfare, the RFC was able to conduct observation and reconnaissance missions over static front lines, giving the relatively inexperienced Corps time and opportunity to improve operational effectiveness.¹² The role the RFC was expected to play also increased as the conditions of static warfare allowed greater accuracy for the spotting of artillery shots.¹³ This role in particular was to teach the RFC (and subsequently the RAF) the importance of denying the enemy the freedom to conduct similar reconnaissance and artillery support tasks themselves. This prevented the German air force from discovering troop concentrations prior to an attack and from conducting effective reconnaissance for their own offensive actions.¹⁴

In improving successful tactical operations, the RFC developed communication techniques to correct the fall of shot whilst aircraft were still in the air.¹⁵ One of these was the Central Wireless Station, 'established in late 1916 as part of the efforts to improve the standard air-artillery co-operation. These provided a logical solution to the problem of directing attack aircraft against targets encountered by corps machines'.¹⁶ Observation was of vital importance to higher commands who found themselves out of touch with the tactical situation of battles they were responsible for conducting. 'The senior RFC officer in the field would be expected to have a headquarters

[HQ] close to that of the general headquarters [GHQ]' in order to provide the Commander-in-Chief (C-in-C) with timely tactical information.¹⁷ Aerial reconnaissance had improved to such an extent that 'by the end of 1917, photographic reconnaissance was in the need of only small refinement, mainly in the field of producing more efficient and effective cameras'.¹⁸

As more tactical air support operations were conducted, more experience was gained and assimilated quickly within the RFC, a remarkable feat when it is remembered that no official thinking or guidelines existed for pilots tasked with ground support operations.¹⁹ Despite this lack of official doctrine, the ground attack role gathered pace during 1916 and when compared to the German air force, the support provided was 'generally effective, not least in terms of delivery of fire-power in lieu of artillery'.²⁰ Recent research has noted, however, that despite the lack of any official guidance the RFC's training manuals did discuss tactical methods and demonstrate the aggressive nature of the Corps.²¹ Aircraft from 21 Squadron were used in both interdiction and close air support roles during the opening phase of the Somme offensive in 1916.²² Jordan has argued that this form of support lacked any real effectiveness, aside from comparisons against the German air force, until 1917—'when ground attack missions involved the delivery of bombs in a manner far different from the speculative raids that had been carried out previously'.²³ Further to this, Jordan claims that due to the limited technological development of bombs the Germans found these raids were a 'source of inconvenience ... rather than providing a devastating blow'.²⁴ Close air support operations, due to their nature of low altitude attacks against ground troops firing back, as well as the close co-operation required with friendly ground troops, meant that the results obtained 'were disappointing when compared with the losses sustained'.²⁵ This was one of the factors that hampered development of this kind of offensive operation during the interwar years.

Even with the formation of the RAF as an independent air force, there was little change in the focus of operations, although there was a public outcry for air attacks to be conducted against German territory after air raids over Britain in 1917.²⁶ The use of aircraft to attack the British civilian population by the German air force shattered the illusion the British public had about the immunity they took for granted.²⁷ An Independent Force (IF), headed by the future Chief of the Air Staff (CAS), Sir Hugh Trenchard was created to fulfil this role. At this time, Trenchard was more in favour of aircraft conducting a tactical rather than an independent strategic role. However, with the end of the First World War and

the independence of the RAF at stake, he saw the benefits an independently led and organised air force could bring.²⁸ He also understood the potential impact that aircraft could have when used in a strategic capacity.²⁹

The RAF in 1918 was a force equipped to conduct a variety of army co-operation missions with a reasonable degree of success although the casualty rates for missions such as close support were still restrictively high with losses running up to thirty per cent.³⁰ Between July 1916 and 11 November 1918 the RAF, including the IF, ‘destroyed or brought down 7,054 enemy aircraft, dropped 6,942 tons of bombs, flew over 900,000 hours (nearly 103 years), and fired over 10½ million rounds at ground targets’.³¹ They were experienced in close air support missions in both an offensive and defensive situation.³² Interdiction roles had been widely developed and were seen to be highly effective in preventing the flow of *matériel* and reinforcements along enemy supply routes. It was in this role that the RAF was the most effective during the last major offensives launched by the German army in the spring of 1918.³³ An article published by the *Journal of the Royal United Services Institute (JRUSI)* in 1934 went as far as to argue that the strategical [*sic*] operations conducted had been of ‘high value’.³⁴ The war, however, had not continued long enough after the formation of the IF for these strategic bombing missions to have any real and noticeable effect,³⁵ but a platform had been built, one from which it would be possible to improve the RAF’s ability to support the army in the field in areas from tactical air support to artillery spotting.

When investigating the impact of aircraft on the battlefield in support of the Third Army in the last one hundred days of the First World War, Jonathan Boff states that ‘news brought by contact patrols ... was generally only 24 minutes out of date’. Of more interest to a study of this nature is the conclusion he puts forward that ‘no single doctrine applied [to air support controls and procedures] across all the British armies’.³⁶ This conclusion can have a significant impact on the interpretation of events of the interwar period, especially when taken against the counter-arguments put forward by David Jordan: ‘By the end of the First World War, the BEF and the RAF had developed an extremely high degree of cooperation [*sic*] that added considerably to the potency of the BEF as the war drew to a close’.³⁷ Jordan has further enforced Richard Hallion’s views on the doctrine applied by the RFC in the First World War. This included different aircraft being employed in different roles on the battlefield such as the use of Sopwith Camels ‘operating at medium altitudes for protection of

reconnaissance, liaison, artillery spotting, and ground-attack flights'.³⁸ As can be seen, whether or not the RAF had a single unified doctrine for the support of ground troops by aircraft is still subject to much intense debate, as is whether the writings of the RFC and RAF can actually be considered doctrine in the first place.

The relative neglect of air power at the tactical and operational levels of war soured relations between the RAF and the army in Britain. This situation was not fully resolved until 1944 when the RAF was able to demonstrate what it had learned in offensive operations against the Germans on the European continent. The RAF's tactical knowledge was based on two things—experiments conducted in Britain, and the refinement of key aspects of these experiments in operations against the enemy in the Western Desert between 1942 and 1943. The development of an Army Co-operation Command (ACC) was at the heart of this learning process in Britain and it was vital to transforming the understanding of the army of the operational-level impact of tactical air power. It also developed concepts that transformed warfare and which were applied by British forces in many different theatres during the Second World War.

There has been an increase in the interest in tactical air power evolution by historians over the past two decades, with a particular emphasis on the developments made in both a single and joint service context during the Second World War. Research has also been conducted on how tactical air power was developed from humble origins in 1914 to an advanced state in 1918. Despite the interest shown in tactical air power development in the Second World War, there has been little focus on the organisation created by the RAF in 1940 to further its development in Britain—the Army Co-operation Command mentioned above. One of the major factors for this lack of interest is that as a non-operational command, ACC could only develop ideas in theory and through experimentation. Once this stage of the ideas development process had been completed, ACC's work ceased and it was continued by operational commands of the RAF. For example,

The focus of the majority of these studies has been on the developments made by the RAF's WDAF under Air Marshal Sir Arthur Tedder and Air Vice-Marshal Sir Arthur 'Mary' Coningham. That the focus has been in this area is not surprising. Ideas about how to provide impromptu air support for ground forces were further refined by the WDAF in operations against the enemy. It was also in this desert theatre that new aircraft were developed, for example the Hurri-bomber, to provide close air support. Focusing on the WDAF and its work in overseas theatres has overshadowed

the achievements of Army Co-operation Command—this book will redress this current imbalance.

It has been argued that very little was done to develop tactical air power during the Second World War,³⁹ but the work of the ACC, undertaken in difficult circumstances and without support from the RAF as a whole, did much to transform thinking on the subject. This book will shed new light on the topic by focusing not only on ACC as a stand-alone command but also by placing the organisation within its historical and geographical context. It will demonstrate the full role played by ACC in developing the tactical air support method that would form part of the basic system used in north-west Europe and Italy.

One of the major grievances of the army from 1918 until the creation of Army Co-operation Command in late 1940 was the lack of a specialised higher command formation within the RAF to work with the army to develop further the air support systems that had been created through the hard work of the First World War. The formation that did deal with army support was located at the Group (No. 22 Group) and not Command level. The lack of such a formation became even more pronounced when the RAF created formations based on a mono-role structure in 1936.⁴⁰ There were also fundamental disagreements between the two services over the nature of air support that should be provided. When the lessons of the First World War were codified by the RAF, the fundamental principle identified was that control of the air over the battlefield was the key to providing any form of air support. Once this had been achieved, the RAF felt that battlefield air interdiction, the use of air power to seal off the battlefield from enemy reserves and *matériel*, should be utilised. The army believed that aircraft should be used primarily in a close air support role, to attack enemy forces engaged with or in close proximity to friendly troops. They further felt that they should have their own organic air force available to provide this form of air support as and when they felt it was required.⁴¹

This fundamental disagreement appeared almost as soon as the fighting on the Western Front had finished. The lack of focus on support for land forces occurred for a number of reasons that will be explored in more depth in the following chapter, but they can be briefly stated as follows: there was a fundamental disagreement between the RAF and the army over the nature of air support that should be provided; the RAF was fighting for its very existence; the economic and political situation facing the governments of the interwar period meant that the development and rearmament of the services was politically difficult; and the state of the aviation industry meant the development of specialist army co-operation

aircraft was low on the list of priorities given the strategic situation of the mid to late 1930s.

In an effort to prevent itself from being disbanded (with an inevitable return to the pre-April 1918 situation of an RFC attached to the army and a Royal Naval Air Service (RNAS) attached to the Royal Navy, the RAF emphasised an application of air power that only it, as an independent air service, could provide. It was also felt by many in the Air Ministry that the application of air power at a strategic level, targeting an enemy homeland, could prevent a repeat of the carnage of the Western Front in the First World War. This emphasis on the strategic application of air power, however, would inevitably lead to disagreements between the RAF and the army. The latter felt that without the necessary and in their view ‘correct’ form of air support in future conflicts against a first-rate continental opponent, they would find themselves at a severe disadvantage.⁴²

The fundamental argument that will be put forward in this book is that Army Co-operation Command aided the development of tactical air support to a greater extent than has previously been recognised by historians in this field. ACC was helped in this success through the work of staff officers who had experienced the difficulties of conducting air support in France in 1940—key problems in how to conduct impromptu air support were highlighted and guided ACC’s thinking in this area. The Command also fostered good relations between RAF and army officers at the lower command levels. These good relations allowed trials and experiments to be conducted between ACC and certain parts of the army, such as the School of Artillery. This was further helped by the fact that the commander of ACC, Air Marshal Sir Arthur ‘Ugly’ Barratt, was a former artillery officer.

The book is laid out as follows. Chap. 1 explores the development of close air support in Britain during the interwar period from the doctrinal base left at the end of the First World War. It starts with analysis of the joint work by the RAF and army in furthering a common intellectual basis through training exercises conducted in Britain. The annual reports of these training exercises are used to demonstrate the state and development of thinking in this area. The problems faced by the RAF in this period between the world wars further highlight the reasoning for the relative neglect of tactical air power. The role of the RAF in policing the empire forms the final section in this chapter. Contemporary reports of the use of air power around the empire are drawn upon to demonstrate how the RAF operated in these areas both independently and with ground forces.

Chapter 2 examines how the doctrine created during the interwar period was applied during the first major operation of the Second World

War in France and Belgium in 1940. This chapter also looks at how agencies created to conduct this support were formed and then re-formed in various guises prior to being engaged on active operations. One of these was the Air Observation Post (Air OP) Squadron and the beginnings of its development are discussed in this chapter as they provide the context required when the organisation's further development is analysed (frequently in subsequent chapters). Finally, the chapter considers the reports written by Lord Gort, C-in-C of the BEF, and Barratt who commanded the RAF in the immediate aftermath of the fighting in France, to contextualise the atmosphere in which army co-operation was created.

Chapter 3 examines the investigations launched in Britain after the fighting in France. Extreme pressure was applied to the RAF to change its attitude towards army co-operation, primarily from the army itself. The work undertaken to improve the RAF's ability to conduct air support in the field, work continued by the ACC, is reviewed. This is followed by an examination of the creation of ACC itself, in order to keep the chronological nature of the book, including how it was created and the RAF's motivations for doing so.

Chapter 4 explains how ACC went about fulfilling its role through 1941. It considers the changes made by the Command's head, Barratt, to allow the Command to function as efficiently and effectively as possible. Barratt's position, as well as his relationships with others in the RAF, is also scrutinised in this section as it further highlights the position of the Command. This is an aspect of ACC that has not been analysed in literature currently available on tactical air power development in Britain during the Second World War. Also in this chapter, the role of ACC working with the army to develop the Air OP Squadron is studied as it highlights what the Command was capable of when allowed a freer rein in its role. Exercises held throughout the year to prepare both the army and the RAF to conduct air support operations is also subject to analysis. To highlight the strategic context within which ACC was working, the steps taken in preparation to conduct anti-invasion operations are also discussed. Aircraft requirements for conducting both the exercises and anti-invasion measures form the final part of the chapter. The major events of the Middle East in 1941 are also mentioned to demonstrate the setbacks and developments taking place overseas in active operations against the *Wehrmacht*.

Chapter 5 continues the examination of the work undertaken by ACC throughout 1942. The major battles in the Middle East and Barratt's visit to the theatre are analysed. The development of the idea to use fighters,

and as a result, the creation of Fighter Command, in tactical air support operations when the army returned to the continent are also examined. From this, the separate ideas put forward by Air Commodore Henry Thorold and Air Vice-Marshal John Slessor, working in isolation regarding what form an army air support organisation should take to support operations against the continent, are compared. These proposals led to formal discussions taking place and there was great debate between the army and the RAF over where this new formation was to be placed within the RAF's Command structure.

Chapter 6 examines the work of ACC until its disbandment in the middle of 1943. The development of the communications system used by land forces to call for air support is examined, as is the role played by the commander during the exercise that tested the army air support group idea, as well as the developments that occurred in the thinking regarding the conduct of army air support as a result. The chapter examines both the actual disbandment of ACC and the subsequent creation of the 2nd Tactical Air Force (TAF). This section concludes by examining the role played by ACC in the development of army air support in Britain between 1940 and 1943, highlighting the difficulties faced by the Command from its inception to its demise, and includes a discussion of RAF attitudes towards this aspect of British air power.

NOTES

1. Andrew Whitmarsh, 'British Army Manoeuvres and the Development of British Military Aviation, 1910–1913', *War In History*, 14: 3 (July, 2007), p. 325.
2. See also Robin Higham, *Air Power: A Concise History* (St. Martin's Press: New York, 1972).
3. David Jordan, *The Army Co-operation Missions of The Royal Flying Corps/Royal Air Force 1914–1918*, unpublished PhD Thesis, University of Birmingham, Great Britain, 1997, p.14. See also Malcolm Cooper, *The Birth of Independent Air Power: British Air Policy in the First World War* (Allen & Unwin: London, 1986).
4. John Buckley, *Air Power in the Age of Total War* (University College London Press: London, 1999), p. 48.
5. Ralph Barker, *A Brief History of the Royal Flying Corps in World War I* (Constable and Robinson: London, 2002 [Constable & Co.: London, 1995]), p. 45.
6. H. Montgomery Hyde, *British Air Policy between the Wars, 1918–1939* (Heinemann: London, 1976), p. 23.

7. Williamson Murray, 'The Influence of Pre-war Anglo-American Doctrine on the Air Campaigns of the Second World War', in Horst Boog (ed.), *The Conduct of the Air War in the Second World War: An International Comparison* (Berg Publishers: New York and Oxford, 1992), p. 237.
8. Hilary St. George Saunders, *Per Ardua: The Rise of British Air Power 1911–1939* (Oxford University Press: London, New York and Toronto, 1944), p. 54.
9. David Jordan, 'War in the air: the fighter pilot', in John Bourne, Peter Liddle and Ian Whitehouse (eds), *The Great World War 1914–45 Vol. I: Lightning Strikes Twice* (HarperCollins: London, 2000), p. 87.
10. Lee Kennett, 'Developments to 1939', in Benjamin Franklin Cooling (ed.), *Case Studies in the Development of Close Air Support* (Office of Air Force History, United States Air Force: Washington, D.C., 1990), p. 18.
11. Peter Simkins, *Air Fighting 1914–18: The Struggle for Air Superiority over the Western Front* (Imperial War Museum: London, 1978), p. 62.
12. Jordan, *The Army Co-operation Missions*, p. 90.
13. Buckley, *Air Power*, p. 47.
14. Jonathan Boff, 'Air/Land Integration in the 100 days: The Case of Third Army', *Air Power Review*, 12: 3 (Autumn, 2009), pp. 77–88.
15. Simkins, *Air Fighting, 1914–18* p. 13.
16. Jordan, *The Army Co-operation Missions*, p. 315.
17. Neville Parton, *The Evolution and Impact of Royal Air Force Doctrine: 1919–1939* (unpublished PhD Thesis, University of Cambridge, Great Britain, 2009), p. 6.
18. Jordan, *The Army Co-operation Missions*, p.134. Cf. H. A. Jones, *The War in the Air: Being the Story of The part played in the Great War by the Royal Air Force Vol. IV*, (Imperial War Museum: London, 1928), chapters 7 and 8.
19. David Ian Hall, *Strategy for Victory: The Development of British Tactical Air Power, 1919–1943* (Praeger Security International: London and Westport, Connecticut, 2008), p. 2.
20. David Jordan, 'The Royal Air Force and Air/Land Integration in the 100 days, August–November 1918', *Air Power Review*, 11: 2 (Summer, 2008), pp. 17–18.
21. James Pugh, *The Conceptual Origins of the Control of the Air: British Military and Naval Aviation, 1911–1918* (PhD Thesis, University of Birmingham, 2012), pp. 174–5.
22. Jordan, *The Army Co-operation Missions*, p. 220.
23. Ibid. p. 216.
24. Ibid., pp. 222–3.
25. The National Archives (TNA), AIR 10/5547, Air Historical Branch (AHB) Narrative: Air Support (AP 3235), 1955.

26. This public outcry was responsible in itself for the creation of an independent RAF, as the British public had never been threatened on this scale previously. R. A. Mason, 'The British Dimension', in Mark K. Wells (ed.), *Air Power: Promise and Reality* (Imprint Publications: Chicago, 2000), p. 12. Also see Alfred M. Gollin, 'England is No Longer an Island: The Phantom Airship Scare of 1909', *Albion: A Quarterly Journal Concerned with British Studies*, 13: 1 (Spring, 1981), p. 43. Alfred Gollin, *The Impact of British Air Power on the British People and their Government, 1909–1914* (Stanford University Press: Stanford, California, 1989).
27. Tami Davis Biddle. *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914–1945* (Princeton University Press: Princeton, New Jersey, 2002), p. 24.
28. David Jordan and Gary Sheffield, 'The British Army and Air Power', in Peter W. Gray (ed.), *British Air Power* (The Stationery Office: London, 2003), p. 71. See also R. A. Mason, *Air Power: An Overview of Roles* (Brassey's: London, 1987).
29. Phillip S. Meilinger, 'Trenchard, Slessor, and Royal Air Force Doctrine before World War II', in Phillip S. Meilinger (ed.), *The Paths of Heaven: The Evolution of Air Power Theory* (Air University Press: Maxwell Alabama, 1997), p. 41.
30. Jordan, 'The Royal Air Force', p. 15. Peter C. Smith, *Close Air Support: An Illustrated History, 1914 to the Present* (Orion Books: New York, 1990), p. 8.
31. TNA AIR 8/13, British Air Effort during the War, Chapter 2 Co-operation with the Army, 1 January 1919.
32. Cf. Malcolm Cooper, 'Blueprint for Confusion: The Administrative Background to the Formation of the Royal Air Force', *Journal of Contemporary History*, 22: 3 (July, 1987), p. 441. Part of the argument of this book is that even after it became an independent force the RAF remained overwhelmingly committed to army co-operation work 'functioning as the RFC before it as a tactical ancillary of the service from which it had sprung'.
33. Jordan, *The Army Co-operation Missions*, pp. 281, 283–4
34. Oliver Stewart, 'Air Forces in the Great War: Some Strategical Lessons', *JRUSI*, 79 (February/November, 1934), p. 293.
35. Maurice Dean, *The Royal Air Force and Two World Wars* (Cassell: London, 1979), pp. 3–4.
36. Boff, 'Air/Land Integration', pp. 82–3.
37. Jordan, 'The Royal Air Force', p. 28. Cf. Jordan, *The Army Co-operation Missions*.
38. Richard P. Hallion, *Strike from the Sky: The History of Battlefield Air Attack, 1911–1945* (Smithsonian Institution Press: Washington and London, 1989), p. 23.

39. Simon Coningham, 'The Battle of Amiens: Air-Ground Co-operation and its Implications for Imperial Policing', in Gary Sheffield and Peter Gray (eds), *Changing War: The British Army, The Hundred Days Campaign and the Birth of the Royal Air Force* (Bloomsbury: London and New York, 2013), p. 223.
40. Alistair Byford, 'Fair Stood the Wind for France? The Royal Air Force's experience in 1940 as a case study of the relationship between policy, strategy and doctrine', *Air Power Review*, 14: 3 (Autumn/Winter, 2011), p. 41.
41. Sebastian Cox, 'The Air/Land relationship—an historical perspective 1918–1991', *Air Power Review*, 11: 2 (Summer, 2000), p. 1.
42. Neville Parton, 'The Development of Early RAF Doctrine', *The Journal of Military History* 72: 4 (October, 2008), pp. 1170–1.

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Matthew Powell

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ABBREVIATIONS

A Air SC	Army Air Support Control
AASC	Army Air Support Control
AASF	Advanced Air Striking Force
AASG	Army Air Support Group
ACAB	Allied Central Air Bureau
ACAS	Assistant Chief of the Air Staff
ACC	Army Co-operation Command
ACM	Air Chief Marshall
AFV	Armoured Fighting Vehicle
AHB	Air Historical Branch
Air OP	Air Observation Post
ALO	Air Liaison Officer
AOC	Air Officer Commanding
AOC-in-C	Air Officer Commanding-in-Chief
ASC	Army Support Control
ASSU	Air Support Signals Unit
AVM	Air Vice-Marshall
BAFF	British Air Forces in France
BEF	British Expeditionary Force
C2	command and control
C3	command, control and communication
CAS	Chief of the Air Staff
CID	Committee of Imperial Defence
C-in-C	Commander-in-Chief
CIGS	Chief of the Imperial General Staff
COS	Chiefs of Staff
CSBC	Close Support Bomber Control

DCAS	Deputy Chief of the Air Staff
DMC	Directorate of Military Co-operation
GHQ	general headquarters
GOC-in-C	General Officer Commanding-in-Chief
HQ	Headquarters
IF	Independent Force
IWM	Imperial War Museum, London
JRUSI	Journal of the Royal United Services Institute
MORU	Mobile Operations Room Units
OTU	Operational Training Unit
PRG	Photographic Reconnaissance Group
RAF	Royal Air Force
RAFM	Royal Air Force Museum, Hendon
RFC	Royal Flying Corps
RHA	Royal Horse Artillery
RNAS	Royal Naval Air Service
R/T	radio telegraphy
SASO	Senior Air Staff Officer
TNA	The National Archives (PRO, UK)
US	United States
VCAS	Vice Chief of the Air Staff
WDAF	Western Desert Air Force
W/T	wireless telegraphy
ZOAN	Zone d'Opérations Aériennes Nord